DETAILED ACTION

1. Claims 1-9 are pending.

Drawings

2. The drawings filed on 1/30/2006 are accepted by the examiner.

Claim Rejections - 35 USC § 112

3. Claim 6 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 cites "wherein the control parameters (4) comprise recording ***AND/OR*** processing..." It is not clear how the applicant wants to divide or keep together the elements of the invention. Correction is needed. For the purposes of examination the above highlighted statement has been considered to be ***OR***.

Claim 9 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 cites "wherein the audio interface (11) consists of audio hardware (8) ***AND/OR*** ..." It is not clear how the applicant wants to divide or keep together the elements of the invention. Correction is needed. For the purposes of examination the above highlighted statement has been considered to be ***OR***.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kellner et al. (US Pre-Grant Publication # 20020065584)

As per claim 1, Kellner discloses:

- **an audio interface for processing audio signals**
- [Kellner, ¶ 0020] discloses "***The speech recognition system 3 includes an interface*** 10 which sets up a connection to an on-board computer 11 of the motorcar." There is an interface that processes audio signals, specifically speech signals. This anticipates the instant application.
- **characteristics of an expected audio input signal are deduced**
- [Kellner, ¶ 19] discloses "A function unit 5 describes the extraction of features of microphone signals supplied by the microphone 2, where features for the individual successive signal sections are customarily combined to feature vectors." The expected audio input signal is a speech signal which is analyzed for feature extraction which anticipates the deducing of characteristics.
- **audio interface control parameters are generated according to these characteristics**
- [Kellner, ¶ 0018] discloses "The control takes place via speech signals which are fed via a microphone 2 to an automatic speech recognition system 3, ***whose recognition results are evaluated by a function unit 4 which causes a conversion into electric control signals to be supplied to the devices/function units 1a and 1b***." The results of the recognition to determine the meaning and therefore the control parameters of the speech are used to control the interface and the attached devices.

- **behaviour of the audio interface is optimised based on the audio interface control parameters**
- [Kellner, ¶ 0023] discloses “Function block 22 combines an optional adaptation of the selected basic reference to reach the more accurate modeling of the detected operating state or operation environment, respectively, to thus form the acoustic reference 8a to be used for the respective speech pause section.” The basic reference is previously assigned to the operating state or operating environment prior to the speech recognition system 3 and then the Function block 22 additionally adapts the basic reference to take into account the speech recognition input. Thus, the audio interface is made better or optimized based on the control parameters determined by the speech recognition system.

As per claim 2, claim 1 is incorporated and Kellner discloses:

- **characteristics are deduced from current and/or prior input data**
- [Kellner, ¶ 19] discloses “A function unit 5 describes the extraction of features of microphone signals supplied by the microphone 2, where features for the individual successive signal sections are customarily combined to feature vectors.” The speech recognition is the "current" characteristic data. [Kellner, ¶ 0023 discloses that the basic reference is previously assigned to the operating state or operating environment prior to the speech recognition system 3 and then the Function block 22 additionally adapts the basic reference to take into account the speech recognition input. Thus there is a prior characteristic that is

deduced from data. The example that is given in [Kellner, ¶ 0023] is that of noise attributed to rain.

As per claim 3, claim 2 is incorporated and Kellner discloses:

- **characteristics are deduced from a semantic analysis of the speech content of the input audio signal**
- [Kellner, ¶ 0018] discloses "The acoustic model 7 has acoustic references 8 and a lexicon 9. A respective acoustic reference is then assigned to a word sub-unit of one or more phonemes. The lexicon 9 defines associated sequences of word sub-units in accordance with the words combined in the lexicon." The input is compared to the acoustic model in operation 6 where the respective acoustic model has been broken down into phonemes and defined by a lexicon. Thus, there is a semantic analysis by comparison of the extracted features of the input signal to the semantically broken down acoustic model.

As per claim 4, claim 2 is incorporated and Kellner discloses:

- **characteristics are deduced from determined environmental conditions data**
- [Kellner, ¶ 0026] discloses "The invention is basically applicable to all speech-controlled devices in which noise signals are superimposed on speech control signals, ***which noise signals can be indirectly determined by the detection of the operating state or operation environment of such a device***." It is

stated in the rejection above that [Kellner, ¶ 0023] shows that there is a basic reference which is a characteristic that is developed and corresponds to a detected operating state or operating environment which anticipates the instant application.

As per claim 8, Kellner discloses:

- **an audio interface**
- [Kellner, ¶ 0020] discloses "***The speech recognition system 3 includes an interface*** 10 which sets up a connection to an on-board computer 11 of the motorcar." There is an interface that processes audio signals, specifically speech signals. This anticipates the instant application.
- **a dialog control unit**
- [Kellner, ¶ 0018] discloses "The control takes place via speech signals which are fed via a microphone 2 to an automatic speech recognition system 3, ***whose recognition results are evaluated by a function unit 4 which causes a conversion into electric control signals to be supplied to the devices/function units 1a and 1b***." The function unit 4 takes the results from the speech recognition and uses them to control attached devices. This anticipates the instant application.
- **a predictor module for deducing characteristics of an expected audio input signal**

- [Kellner, ¶ 19] discloses "A function unit 5 describes the extraction of features of microphone signals supplied by the microphone 2, where features for the individual successive signal sections are customarily combined to feature vectors." Function unit 5 deduces characteristics of the input signal by feature extraction.
- **an audio optimiser for optimising the behaviour of the audio interface by generating audio input control parameters based on the characteristics**
- [Kellner, ¶ 0023] discloses "Function block 22 combines an optional adaptation of the selected basic reference to reach the more accurate modeling of the detected operating state or operation environment, respectively, to thus form the acoustic reference 8a to be used for the respective speech pause section." Function block 22 optimizes the behavior of the audio interface by adapting the basic reference to the speech recognition data. The basic reference is the noise generated by a device that affects the input, thus the noise is adapted to. This controls the signal input to perform better, or be optimized, based on the characteristics of the basic reference.

As per claim 9, Kellner discloses:

- **the audio interface consists of audio hardware or an audio driver or an audio module**
- [Kellner, ¶ 19] discloses "A function unit 5 describes the extraction of features of microphone signals ***supplied by the microphone 2***, where features for the

individual successive signal sections are customarily combined to feature vectors." Kellner teaches the use of a microphone as a part of the interface. A microphone is audio hardware and thus teaches the instant application.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kellner et al. (US Pre-Grant Publication # 20020065584) in view of Everhart et al. (US Patent # 6240347)

As per claim 5, claim 1 is incorporated and Kellner fails to teach:

- **characteristics are deduced from an expected response to a current prompt of the dialog system**

Everhart, in analogous art, teaches the above limitation,

- [Everhart, column 4, lines 2-7] discloses "navigation functional parameters controllable via speech processor 20 include accessing various navigation menus, map guidance and destination entry, display commands for zooming in and zooming out, ***requesting repeat of voice instructions***, navigation system

set-up, and others." The characteristics of the voice control input are deduced from the response expected to be given when the system requests the repeat of voice instructions.

- Everhart and Kellner are analogous art because they both pertain to speech recognition control systems. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Everhart with the Kellner device because Everhart's "invention has the advantages of providing a convenient and easy to use interface while minimizing system components by sharing resources between separate control devices [Everhart, column 1,lines 40-45]." The interface system is analogous to the interface system in Kellner.

Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellner et al. (US Pre-Grant Publication # 20020065584) in view of Fado et al. (US Patent #7340397)

As per claim 6, claim 1 is incorporated Kellner fails to teach:

- **wherein the control parameters comprise recording or processing parameters for an audio driver of the audio interface**

Fado, in analogous art, teaches the above limitation,

- [Fado, column 4, lines 18-25] discloses "The speech recognition hardware platform 105 can include the input device 110 with an associated input controller 115. ***The input controller 115 can be a processing engine***

capable of adjusting one or more settings, such as a microphone sensitivity adjustment, resulting in an optimization of signal-to-noise-ratio (SNR) and/or total harmonic distortion (THD), often measured as THD plus noise (THD+N)." The speech input to the hardware comprises parameters that are processed that affect how the audio driver operates. It is inherent that Fado contains an audio driver to receive audio and make it readable to the hardware platform.

- Fado and Kellner are analogous art because they both pertain to speech recognition. It would be obvious to combine Fado with the Kellner device because "Properly optimizing audio input for speech recognition tasks can be challenging, primarily due to the need to match optimization settings with the acoustic characteristics of an operational environment. Problematically, a wide variety of environments exist over which optimization routines must operate [Fado, column 1, lines 21-24]" Kellner operates within an adaptive environment and it would be obvious to provide Kellner with the audio input optimization that Fado provides.

As per claim 7, claim 1 is incorporated and Kellner fails to teach:

- **Voice input to control devices**
- [Kellner, ¶ 0018] discloses "The control takes place via speech signals which are fed via a microphone 2 to an automatic speech recognition system 3, ***whose recognition results are evaluated by a function unit 4 which causes***

a conversion into electric control signals to be supplied to the devices/function units 1a and 1b." The results of the recognition to determine the meaning and therefore the control parameters of the speech are used to control the interface and the attached devices.

Kellner fails to teach,

- **Wherein the control parameters comprise threshold parameters for an audio module of the audio interface**
- [Fado, column 6, lines 37-40] discloses "In operation, a user of the optimization application 205 can select the source 210 waveform from among a list of stored waveforms. Alternately, a user of the optimization application 205 can trigger an input device to record an audio sample to be used as the source waveform 210. Once selected, the user can specify one or more optimization parameters, such as an optimization parameter that establishes a dynamic noise floor threshold." The user is able to specify control parameters that comprise a dynamic noise floor threshold. This floor threshold sets a threshold bar which alters the characteristics of the audio module to only accept components above the established dynamic noise floor. [Fado, column 6, lines 49-51] shows this in "For example, the modified waveform 215 can contain all source waveform 210 components above an established dynamic noise floor…."
- Fado and Kellner are analogous art because they both pertain to speech recognition. It would be obvious to combine Fado with the Kellner device because "Properly optimizing audio input for speech recognition tasks can be

challenging, primarily due to the need to match optimization settings with the acoustic characteristics of an operational environment. Problematically, a wide variety of environments exist over which optimization routines must operate [Fado, column 1, lines 21-24]" Kellner operates within an adaptive environment and it would be obvious to provide Kellner with the audio input optimization that Fado provides.

Conclusion

6. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG A. BORSETTI whose telephone number is (571)270-3885. The examiner can normally be reached on Monday - Thursday (8am - 5pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chameli Das can be reached on 571-272-3696. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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